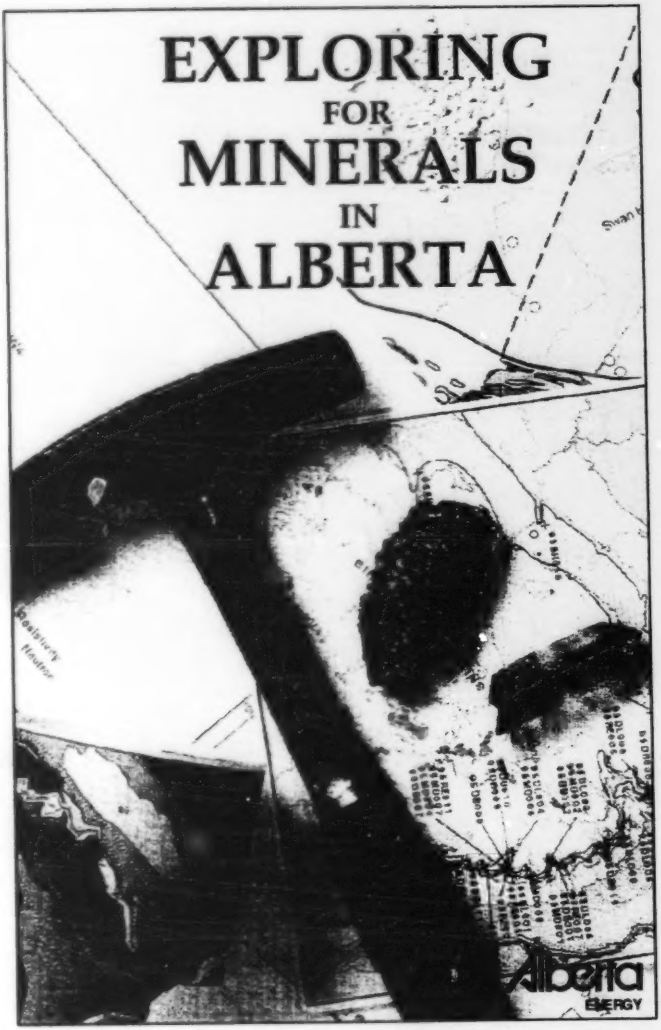
EXPLORING FOR MINERALS IN ALBERTA



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EXPLORING FOR MINERALS IN ALBERTA

INTRODUCTION

The Western Canada Sedimentary Basin underlying most of Alberta contains vast mineral wealth. The geological strata not only contain oil sands, oil, natural gas and coal deposits, but also a large variety of metallic and industrial minerals. In addition, the Canadian Shield in the northeast corner of the province consists of igneous and metamorphic rocks of Precambrian age similar to those in other regions of Canada where important deposits of metallic minerals have been found.

Development of metallic and industrial mineral resources in Alberta has long been overshadowed by a focus on oil, natural gas, oil sands and coal. Although the province has over 40 known kinds of metallic and industrial minerals, only a few are currently being produced. Potential exists for new discoveries and the production of many other types of minerals including gold, silver, base metals and diamonds.

Much of this potential has yet to be defined. Only limited exploration and development of mineral resources other than oil, natural gas and coal has taken place. The Government of Alberta has attempted to remedy this deficiency and broaden the province's economic base in several ways:

- by providing tenure and royalty regulations that encourage mining development;
- by providing extensive support services such as geological mapping and geophysical research; and
- by producing geoscience data, maps, reports and assessments through the Canada-Alberta Partnership on Minerals.

This publication is intended for individual prospectors, prospecting/mining associations and companies actively involved or interested in exploring for and developing metallic and industrial minerals in Alberta. The information provides a general explanation of the steps involved in metallic and industrial mineral development. The Acts and Regulations that apply to this activity represent the final authorities for any administrative or regulatory procedures.

1.0 EXPLORATION

1.1 Prospecting and Geophysical Surveys

Prospecting for Crown minerals using hand tools is permitted throughout Alberta without a licence, permit or regulatory approval, as long as there is no surface disturbance. (Ammonite is an exception, and requires an ammonite shell collector's permit.) Prospecting on privately owned land or land under lease is permitted without any departmental approval, however, the prospector must obtain consent from the landowner or leaseholder before starting to prospect. Unoccupied public lands may be explored without restriction, but as a safety precaution prospectors working in remote areas should inform the local forestry office of their location.

When prospecting, the prospector can use a vehicle on existing roads, trails and cutlines. If the work is on public land, the prospector can live on the land in a tent, trailer or other shelter for up to 14 days. For periods longer than 14 days, approval should be obtained from the Land Administration Division. If the land is privately owned or under lease, the prospector must make arrangements with the landowner or leaseholder.

Exploration approval is not needed for aerial surveys or ground geophysical and geochemical surveys, providing they do not disturb the land or vegetation cover.

1.2 Exploration Regulations

If mechanized exploration equipment will be used and/or the land surface disturbed, the prospector or company must obtain the appropriate approvals and permits, as required under the Metallic and Industrial Minerals Exploration Regulation. Most projects require an Exploration Licence, Exploration Permit and Exploration Approval. The following sections describe the criteria and procedures for each of these.

1.3 Exploration Licence

An Exploration Licence must be obtained before a person or company can apply for or carry out an exploration program. The licence holder is then accountable for all work done under this exploration program. However, the licensee cannot carry out any actual exploration activity until the Department of Environmental Protection issues an Exploration Approval for each program submitted under that licence.

The licence application must be accompanied by a fee of $50. The licence is valid throughout Alberta and remains in effect as long as the company is operating in the province.

1.4 Exploration Permit

If a licence holder wants to use exploration equipment, such as a drilling rig, an Exploration Permit must be obtained. The

Table 1
Summary of Exploration Regulatory Documents

	Issue To	Purpose	Apply To
Exploration Licence	Company or person wanting to explore	Province-wide permission to explore for metals	Land Administration Division Sustainable Resource Development 2nd Floor, 9915 - 108th St Edmonton, Alberta T5K 2G8 Ph. 427-3570 Fax 422-3120
Exploration Permit	Company or person wanting to operate equipment (often a contractor hired by exploration company)	Province-wide permission to operate exploration equipment	same
Exploration Approval	Company or person wanting to explore	Site-specific permission to conduct exploration which involves environmental disturbance	same

licence application must be accompanied by a fee of $50. The permit is valid throughout Alberta and remains in effect as long as the company is operating in the province.

1.5 Exploration Approval

Approval must be obtained if an exploration project involves environmental disturbance such as drilling, trenching, bulk sampling or the cutting of grids that involve more than limbing trees and removing underbrush. Samples up to 20 kg in size may be taken for assay and testing purposes, but larger samples must be authorized by the Department of Energy. The licensee does not need to hold the mineral rights for an area to apply for an Exploration Approval.

Project approval is through the Land and Forest Service of Alberta Environmental Protection. If an application has been completed and the appropriate field staff have copies of the program, approval can usually be obtained in about 10 working days.

Each application for exploration approval must be accompanied by a fee of $100 and contain the following information:

a. type of minerals being explored for;

b. techniques and equipment to be used;

c. expected startup and completion dates of program;

d. names and addresses of contractors who will conduct the fieldwork;

e. maps showing locations of both the existing and proposed drill, sample or excavation sites;

f. location of campsites and landing strips; and

g. location of new and existing routes proposed to gain access to drill, sample and campsites.

After receiving exploration approval, the prospector or exploration company may conduct the approved activity. However, if they modify their program, the designated field officer must be contacted to review and approve the changes.

A final report must be submitted to Land and Forest Service within 60 days following completion of the exploration program. The report must show the actual fieldwork, and include a map showing the location of drilling, test pits, excavations, constructed roads, existing trails utilized and all other land disturbances.

The contact office for exploration approvals is:

Applications and Approvals Section
Land Administration Division
Sustainable Resource Development
2nd Floor, South Petroleum Plaza
9915 - 108th St.
Edmonton, Alberta T5K 2G8

Phone: (780) 427-3570
Fax: (780) 422-3120

2.0 MINERAL RIGHTS ACQUISITION

2.1 Mineral Exploration Rights

If a prospector or company wants the exploration rights to a specific area, an application must be made for a Metallic and Industrial Minerals Permit for the location. The application must contain a description of the land using the legal land survey system in Alberta (township, range, meridian), and be accompanied by a fee of $500. The maximum area covered by a permit is 9216 ha (one township). Applications for permits can be made at the following locations:

Coal & Mineral Development
Department of Energy
7th Floor, North Petroleum Plaza
9945 - 108 Street
Edmonton, Alberta T5K 2G6

Phone: (780) 427-7707
Fax: (780) 422-5447

Information Centre
Department of Energy
3rd Floor, Monenco Place
801 - 6th Avenue SW
Calgary, Alberta T2P 3W2

Phone: (780) 297-6324
Fax: (780) 297-2576

Any person or company may hold more than one permit at the same time. The initial term of a permit is 10 years, in five assessment periods of two years each.

2.2 Assessment Requirements

A permit holder needs to do assessment work on the land so that the permit remains valid and in good standing with the Crown. During each two-year period, the following needs to be spent assessing the property for the minerals listed in the application:

$5/ha during the first two years.
$10/ha over the next two-year period.
$10/ha over the next two-year period.
$15/ha for the next two-year period.
$15/ha for the last two-year period.

A permit holder who spends more than the required amount per year in assessment work can apply to have the additional amount transferred to any remaining period of the permit.

At the end of each two-year period, a report on the assessment work done during that time must be submitted to the Department within 90 days. The report must describe the work results and contain an itemized statement of expenditures. It must be certified by a professional geologist, professional geophysicist, professional engineer or verified and signed by the prospector. The information that should be included in the assessment report is specified in the Regulation. The assessment report is kept confidential for one year, but after that it is kept in an open file.

If the assessment work and report are satisfactory, the next two-year term of the permit is continued. If the permittee does not fully carry out the assessment work, or if the report is unsatisfactory, the permit may be cancelled or the size of the permit area reduced.

For the purpose of filing assessment work, the regulation allows contiguous permits to be grouped and a single report submitted for the block of permits. Expenditures may then be assigned to any permits within the group. Once assigned to a permit, however, the assessment expenditures may not be transferred.

There may be circumstances where a permit holder is unable to conduct enough work on a permit or permits to meet the assessment requirements. The regulation allows a permit holder to pay to the Minister an amount equivalent to the assessment that would be required to continue holding the permit, once during the permit's term.

2.3 Allowable Assessment Work

The kinds of work that may be submitted to the Department as assessment work include:

- prospecting
- stripping and trenching
- drilling
- geological survey
- geochemical survey
- geophysical survey
- transporting drill core to core storage facility
- reclamation of disturbed sites
- assay and analytical work

2.4 Metallic and Industrial Minerals Leases

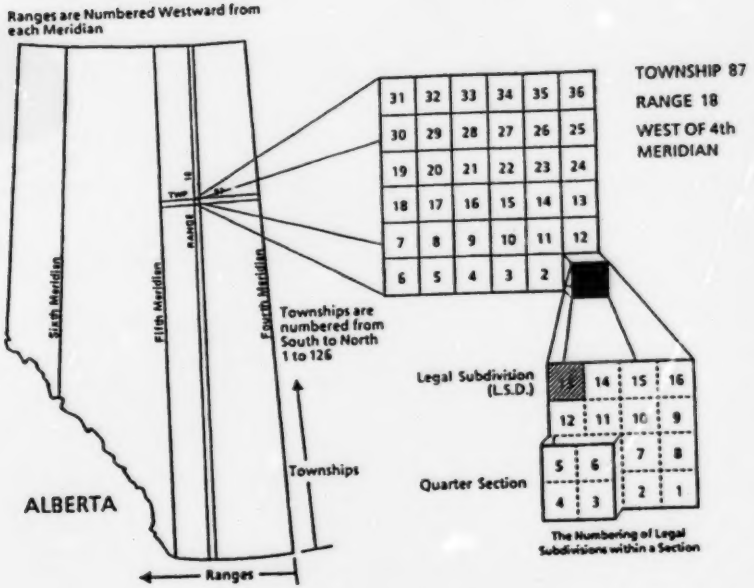
A permit holder who has met the terms and conditions of the Metallic and Industrial Minerals Permit may apply for a Metallic and Industrial Minerals Lease for all or part of the location. Under certain circumstances, a lease may be granted without exploration work having been done, if the Department agrees the work was not needed. This lease gives the leaseholder the exclusive right to recover the Crown's metallic and industrial minerals within the specified location.

The application must be accompanied by a fee of $500 and the annual rental of $3.50 per hectare. The lease is valid for 15 years, and can be renewed if the property is in production or if the Department has approved a development plan for the lease. Application for a lease should be made to:

Coal & Mineral Development
Department of Energy
7th Floor, North Petroleum Plaza
9945 - 108th Street
Edmonton, Alberta T5K 2G6

Phone: (780) 427-7707
Fax: (780) 422-5447

Alberta Survey System


Ranges are Numbered Westward from each Meridian
Sixth Meridian
Fifth Meridian
Fourth Meridian
ALBERTA
Ranges
Townships
Townships are numbered from South to North 1 to 126
TOWNSHIP 87
RANGE 18
WEST OF 4th MERIDIAN
31 32 33 34 35 36
30 29 28 27 26 25
19 20 21 22 23 24
18 17 16 15 14 13
7 8 9 10 11 12
6 5 4 3 2 1
Legal Subdivision (L.S.D.)
Quarter Section
13 14 15 16
12 11 10 9
5 6 7 8
4 3 2 1
The Numbering of Legal Subdivisions within a Section

3.0 INFORMATION ON MINERAL AGREEMENTS

3.1 Mineral Agreements Disposition Maps

The Department produces two types of maps that provide the public with accurate information on metallic and industrial mineral agreements. The 1:750,000 series provides more detail on agreement boundaries and numbers, freehold minerals, lands unavailable for lease, and areas where surface access is restricted. The 1:50,000 maps are available for only part of northeastern and southwestern Alberta.

3.2 Map Updates

Each map sheet shows the date of the last revision in the legend. The original copies are updated and maintained by the Mineral Access and Mapping Section of the Department of Energy. Copies are not kept in stock, but diazo prints can be produced upon request weekdays from 8:15 a.m. to 4:30 p.m. at the Edmonton office. Map requests received at the Calgary Information Centre by noon will be available for pick-up by noon of the following working day at that same location. In addition, both areas maintain a current set of printed maps for public viewing.

Diazo copies of the maps can be obtained at:

Minerals Access, Geology and Mapping
Department of Energy
4th Floor, North Petroleum Plaza
9945 - 108th Street
Edmonton, Alberta T5K 2G6
Phone: (780) 427-7707
Fax: (780) 422-3044

Map orders are also accepted at:

Information Centre
Department of Energy
3rd Floor, Monenco Place
801 - 6th Avenue SW
Calgary, Alberta T2P 3W2
Phone: (403) 297-6324
Fax: (403) 297-2576

3.3 Searches of Agreements

Detailed and current information on the status, location, registered holders and term of mineral agreements may be obtained through the Calgary Information Centre. Standard searches can be conducted either by land description or agreement number.

Searches are also conducted by private land information companies. These searches may be more varied than those performed by the Department of Energy, or be tailored to the specific needs of certain types of inquiries. There is a charge for searches, whether conducted by the Department or a private land information company.

4.0 LAND USE POLICIES, ENVIRONMENTAL PROTECTION

4.1 Environmental Protection

Before industry proceeds with exploration and development, they should be made aware of any environmental concerns in their area of interest. All applications for metallic mineral rights are referred to relevant departments for review. The departments will assess potential or existing environmental concerns on the land outlined in the application. The applicant is advised of any concerns identified by the departments. The name of the appropriate government person to contact for more information is also provided. If the applicant considers the identified environmental concerns to be too serious to warrant further mineral exploration or development, the applicant may cancel the application.

4.2 Land Use Policies

In 1977, the Government of Alberta approved *A Policy for Resource Management of the Eastern Slopes*. It was developed in response to the increased pressures on public lands, and the need to coordinate the multiple uses of resources along the eastern slopes of the Rocky Mountains. The Policy, revised in 1984, provides broad direction for the management and use of public land and resources. It also provides a framework for more detailed subregional integrated resource planning.

An integrated resource plan presents the Government of Alberta's resource management policy for public lands and resources, including minerals, within a defined area. Rather than being a regulatory mechanism, a plan is intended to be a guide for resource managers, industry and the public with responsibilities or interests in that area. The planning process ensures that interests and concerns are identified and considered in decisions about public land management, use and allocation.

5.0 GEOSCIENCE SERVICES

The Alberta Geological Survey (AGS), a unit of the Resources Division of the Alberta Energy and Utilities Board (AEUB), provides services such as geological mapping, geological databases, laboratory analyses and information dissemination including publications and assessment reports. The AGS also maintains a minerals and core storage facility in Edmonton.

5.1 Geological Mapping, Research and General Assistance

Geological and mineral resource mapping is ongoing. Between 1992 and 1995, a significant amount of new mapping and research was done through the Canada-Alberta Partnership on Minerals (MDA), a joint effort of the federal and provincial governments working with industry. Geological maps were upgraded for parts of the Precambrian shield in northeastern Alberta, and data useful for diamonds, gold (and other metals), placer gold, limestone and gravel exploration were gathered for many parts of Alberta. The potential for industrial minerals in Alberta formation waters was also assessed.

The AGS geoscience publications can be viewed or purchased at AGS Publication Sales.

5.2 Mineral Core Storage and Examination

A drill core storage and selection program was started by the Department in 1979. The submission of core drilled during exploration for metallic or industrial minerals may be required as part of the conditions of the exploration approval. Core is selected by an AGS geologist and preserved for examination by the public, industry or the scientific community. To examine mineral exploration core samples, arrangements must be made in advance by contacting:

Manager, Mineral Core Storage Facility
Alberta Geological Survey
Energy & Utilities Board
4th Floor, Twin Atria Building
Edmonton, Alberta T6B 2X3
Phone: (780) 466-1779
Fax: (780) 422-1459

Core from oil, gas and coal drilling in Alberta is obtained by the AEUB, and is available for logging and sampling in Calgary.

5.3 Publication Sales

The AGS maintains a publications office:

Information Sales

4th Floor, Twin Atria Building
Edmonton, Alberta T6B 2X3
Phone: (780) 427-3791
Fax: (780) 422-1459

Phone: (780) 427-2890
Fax: (780) 422-1918

AGS publications, including the provincial reports conducted under the MDA, several electronic geological databases and geological publications issued by the Alberta Research Council are available through the AGS Sales office, located at the address shown above.

Geological reports and maps produced by the Geological Survey of Canada (GSC) are available through the GSC in Ottawa or the Institute of Sedimentary and Petroleum Geology in Calgary. Reports produced by the GSC under the Alberta MDA can be viewed (but not purchased) at the Alberta Department of Energy library in Edmonton.

5.4 Mineral Databases

A number of geological databases have been developed at the AGS, and selected ones can be purchased through AGS Information Sales.

The Alberta Mineral Deposits and Occurrences (AMDO) database is a metallic and industrial minerals database developed from published and unpublished reports of mineral deposits and occurrences. AMDO can be purchased from the AGS.

The Athabasca Oil Sands Database contains geological information from numerous drill holes in the Athabasca area. Information about the data contained in the database is available on request, or a report describing it can be purchased from the AGS. The entire Athabasca Oil Sands Database is also available for purchase from the AGS.

The Mineral Information System (MIS) meta database contains information on MDA geoscience projects. Information on coal and mineral aggregate is also available through the AGS. For general information on MDA projects, or specific information on coal or mineral aggregate, contact AGS staff. Advice and addresses are available to those who wish to access geological information through the internet.

5.5 Geophysical and Remote Sensing

Various geophysical and satellite data can be obtained through the AGS. Petrophysical well log data for all of Alberta are available for viewing on microfiche. Similar downhole geophysical data can be obtained from the AEUB in Calgary. Airborne geophysical data and reports can be purchased from the Canada Centre for Remote Sensing or the GSC in Ottawa.